

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As fanlike aggregates to 1 mm of tabular crystals, elongate along [010], to 0.1 mm, with lance-like terminations at ~80°; as lamellar curved crystals and as crusts.

**Physical Properties:** *Cleavage:* None. *Fracture:* n.d. *Tenacity:* n.d. *Hardness:* = 4.5  
D(meas.) = 4.2 D(calc.) = 4.09-4.13

**Optical Properties:** Translucent. *Color:* Orange-brown. *Streak:* Light brown. *Luster:* Vitreous. *Optical Class:* Biaxial (+).  $a(\text{calc.}) = 1.78$   $\beta = 1.79(1)$   $\gamma = 1.85(2)$   $2V(\text{meas.}) = 48(5)^\circ$   
*Dispersion:* Distinct,  $r > v$ . *Orientation:* Z parallels [010],  $X \wedge c = 10^\circ$  (in obtuse  $\beta$ ).  
*Pleochroism:* Strong, X = yellow, Y = brown, Z = pale yellow.

**Cell Data:** *Space Group:* C2/m.  $a = 9.024(1)$   $b = 6.230(1)$   $c = 7.421(1)$   $\beta = 115.15(1)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Saxony, Germany.  
2.545 (100), 2.828 (88), 2.972 (82), 4.955 (66), 3.398 (54), 3.115 (51)

Chemistry:	(1)	(2)
CaO	12.18	12.60
MgO		0.72
NiO	5.76	3.36
CoO	15.70	15.94
Fe <sub>2</sub> O <sub>3</sub>	11.53	11.97
As <sub>2</sub> O <sub>5</sub>	49.36	49.02
H <sub>2</sub> O	[6.39]	[6.39]
Total	100.92	100.00

(1) Saxony, Germany; average electron microprobe analysis, H<sub>2</sub>O calculated; corresponds to Ca<sub>1.01</sub>(Co<sub>0.97</sub>Fe<sub>0.67</sub>Ni<sub>0.36</sub>)<sub>Σ=2.00</sub>(AsO<sub>4</sub>)<sub>2.00</sub>[(OH)<sub>0.69</sub>(H<sub>2</sub>O)<sub>1.31</sub>]<sub>Σ=2.00</sub>. (2) Bou Azzer district, Anti-Atlas, Morocco; average electron microprobe analysis, H<sub>2</sub>O calculated.

**Polymorphism & Series:** Solid solution among Co, Fe<sup>3+</sup>, and Ni-dominant endmembers is common.

**Mineral Group:** Tsumcorite-group, lotharmeyerite subgroup.

**Occurrence:** In the oxidation zone of polymetallic ore deposits.

**Association:** Alumopharmacosiderite, bariumpharmacosiderite, arseniosiderite, zeunerite, olivenite, rooseveltite (Rappold and Pucher mines); Co- and Ni-bearing mawbyite, cobalttsumcorite, galena, arseniosiderite, plumbogummite (Am Roten Berg, Schneeberg-Neustädtel); erythrite, heterogenite (Tazalaght deposit); roselite, roselite-beta, dolomite, quartz (Bou Azzer district).

**Distribution:** In dump material from the Rappold, Pucher and Am Roten Berg mines, near Scheeberg, Saxony, Germany; at the Tazalaght Cu-As deposit, near Tazalaght, 40 km east of Tafraout city, Bou Azzer district, Anti-Atlas, Morocco.

**Name:** The prefix, *cobalt*, indicates the cobalt analog of *lotharmeyerite*.

**Type Material:** Bergakademie, Freiberg, Saxony, Germany.

**References:** (1) Krause, W., H. Effenberger, H.-J. Bernhardt, and M. Martin (1999) Cobaltlotharmeyerite, Ca(Co,Fe,Ni)<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>(OH,H<sub>2</sub>O)<sub>2</sub>, a new mineral from Schneeberg, Germany. N. Jb. Mineral. Mh., 1999, 505-517. (2) (2000) Amer. Mineral., 85, 873 (abs. ref. 1). (3) Sarp, H. and G. Favreau (2000) Seconde occurrence du nouveau minéral cobaltlotharmeyerite Ca(Co,Fe,Ni)<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>(OH,H<sub>2</sub>O)<sub>2</sub>. Arch. Sci. Genève 53(1), 49-54 (in French).